UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,424	10/01/2003	Edvard Falt	9000/2023	1506

29933 7590 02/05/2007

PALMER & DODGE, LLP
KATHLEEN M. WILLIAMS
111 HUNTINGTON AVENUE
BOSTON, MA 02199

EXAMINER	
MILLER, MARINA I	
ART UNIT	PAPER NUMBER
1631	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/676,424	FALT ET AL.	
	Examiner	Art Unit	
	Marina Miller	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28 and 30-35* is/are pending in the application.

4a) Of the above claim(s) *-8, 13-14, 18-20, 27-28, and 34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 9-12, 15-17, 21-26, 30-33, and 35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicants' submission filed on 11/15/2006 is acknowledged.

Claims 1-28 and 30-35 are pending.

Claim 29 is cancelled.

Claims 7-8, 13-14, 18-20, 27-28, and 34 are withdrawn again from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions and species, there being no allowable generic or linking claims. Election was made with traverse in the response filed 11/2/2005.

Claims 1-6, 9-12, 15-17, 21-26, 30-33, and 35, as they read on elected species, are presently are under examination.

Applicants' arguments have been fully considered. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are applied.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

Claims 1-6, 9-12, 15-17, 21-26, 30-33, and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 2, as amended, recite the limitation "providing a population of transgenic insects comprising a human neurodegenerative disease gene." The limitation is unclear because

the relation of the phrase "a human neurodegenerative disease gene" to the rest of the claim and what element of the claim "a human gene" limitation is intended to limit, *e.g.*, an agent, a trait, an effect, specimens, a population, *etc.*, is not clear. As the intended limitation is not clear, claims 1-6, 9-12, 15-17, 21-26, and 30-33 are indefinite.

Claims 1, 2, 9, 10, 15, and 23, as amended, and new claim 35 recite a method for "determining an effect of a test agent on a population." The claims further recite steps of providing a population, administering a test agent, creating an image of a trait, and correlating the traits with the effect of the test agents. Claim 9 further recite generating an agent phenoprofile and ranking agents. Claims 10, 15, and 23 also recite determining a phenoprofile, comparing the test and reference phenoprofile and selecting an agent. Claim 23 comprises the step of determining whether the agent modifies onset of trait. Claim 35 also recites generating an agent phenoprofile and comparing the test and a reference phenoptrofile. None of the methods actually recite a step of "determining" the effect of an agent. Thus, the relationship between the preamble and the steps is not clear because it is not clear whether the step of "correlating" (or ranking and selecting an agent recited in dependent claims 9, 10, 15, and 23) is intended to result in "determining", IS a step of determining, uses the result of correlating, ranking, and selecting in "determining" the effect of an agent, *etc*. Applicants amended claims 1 and 2 to "clarify" that "correlating" IS "determining the effect" (p.10 of the answer). Applicants also stated that "the effect is determined by the step of correlation" (p.11 of the answer). However, it is noted that *correlating* a trait and an effect of an agent generally requires knowing the trait and the effect. For example, agent A "slows" speed (trait) from 10 to 5 miles per hour (effect); agent B - to 2 miles per hour, *etc*. Therefore generally, "determining" an effect is a prerequisite for

"correlating" a trait and the effect. Further, if the step of correlating recited in parental claims 1 and 2 IS "determining" the effect (see the answer, pages 10 and 11), then the relation of the steps recited in claims 9, 10, 15, and 23 to the steps recited of the parental claim(s) is not clear. Also, "determining an effect of an agent" requires comparing quantitative/qualitative measures of the trait in a test and reference population (*e.g.*, before and after administration of an agent). It is not clear what "correlating" is intended and whether the step of "correlating" comprises "comparing" a test and a reference. Although claims 10, 15, 23, and 35 comprise a step of comparing an agent and reference phenoprofiles, the claims still comprise the step of correlating, wherein it is still not clear what "correlating" is intended. Therefore, the intended limitation is still not clear. As the intended limitation is not clear, claims 1-6, 9-12, 15-17, 21-26, 30-33, and 35 are indefinite.

Claims 1 and 2, as amended, and new claim 35 recite a method for "determining an effect of a test agent on a population comprising providing a population, administering a test agent, creating an image of a trait, and correlating the traits with the effect of the test agents." The relationship between the method steps is not clear. Specifically, the step of administering an agent does not seem to relate to a step of creating an image showing a trait because it is not clear whether the image is created for the population after and/or before administering the agent.

Further, the step of correlating the traits of the population does not seem to relate to other steps because "the effect of the test agent" is not determined in other method steps. As the intended limitation is not clear, claims 1-6, 9-12, 15-17, 21-26, 30-33, and 35 are indefinite.

Claims 3-4, as amended, recite the limitation "claim 1 [2] further comprises ... quantifying ... trait." It is not clear where the step fits within the parental claims (*e.g.*, before or after the correlating step), and whether "the quantified trait" is intended to be "the effect" of a test agent. As the intended limitation is not clear, claims 3-4 and 6 are indefinite.

Claim 9, as amended, recites "generating an agent phenoprofile ... and ranking said test agents according to the similarity or difference of each agent phenoprofile with a reference phenoprofile defined by said trait that is measured in a reference population." It is not clear what actual steps the step of "ranking" comprises, *e.g.*, comparing/determining similarity, measuring a trait in a reference population, and generating a reference phenoprofile, etc. Therefore, the relation of the step of "ranking" to the rest of the claim is unclear because a reference phenoprofile is not determined in other method steps. Moreover, a step of comparing the reference and test phenoprifiles are not recited in the claim. As the intended limitation is not clear, claims 9, 11-12, 21-22, 25-26, and 32-33 are indefinite.

Claims 9, 10, 15, and 23, as amended, recite "generating/determining an agent phenoprofile." Applicants argue that generating/determining a phenoprofile, as recited in claims 9, 10, 15, and 23 implicitly comprises the steps of creating a digital image and correlating a trait with the effect recited in parental claims 1 and 2 (see the answer, pages 10). Therefore, it is not clear whether or not the step of generating/determining a phenoprofile recited in claims 9, 10, 15, and 23 is intended to substitute for the steps recited in parental claims 1 and 2 or is one of generating a new/different phenoprofile. As the intended limitation is not clear, claims 9, 10-12, 21-22, 25-26, 28, and 32-33 are indefinite.

Claims 10 and 15 recite the limitation "more or less similar to the reference profile." The limitation makes the claim vague and indefinite because the metes and bound of the claim is not clear, and neither the specification nor the claim defines the limitation of "more or less" with regard to similarity. As the intended limitation is not clear, claims 10-12, 15-17, 24-26, and 32-33 are indefinite.

Claim 35 recites the steps of generating an agent phenoprofile, comparing the agent and a reference phenoprofiles to generate a phenoprint, and correlating the phenoprint after administering the agent with the effect of the agent. It is not clear what "correlation" is intended because a phenoprint is defined in the specification as "a defined set of traits that distinguish one population from a second population" (p. 49). Therefore, a phenoprint already comprises "correlation" of traits (*e.g.*, movement) and effects (measured values of the trait). As the intended limitation is not clear, claim 35 indefinite.

Answer to arguments

Claims 1 and 2 recite the limitation "correlating the traits of the population with the effect of the agents administered to the population." The claims were previously rejected over "correlating" because criteria, algorithm, and/or specific directions of performing the comparison were not clear. Applicants argue that correlating means simply the observation that a given trait is associated with the effect of an agent.

In response, it is noted that the claims do not recite "observation" or any specific steps of "correlation" and one skilled in the art would not know what step is intended and what (and according to what parameters) is correlated. The specification does not disclose any correlation steps/algorithm, and therefore one skilled in the art would not know what steps to perform. The

specification only discloses comparing a test and reference phenoprofiles by using multivariate analysis (see page 46-49). Thus, it is still not clear what "correlating" is intended.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Claims 1-6, 9-12, 15-17, 21-26, 30-33, and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Botas, US 2004/0177388.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Botas discloses a method for screening for a compound having activity against neurodegenerative disorder in transgenic fly larvae (*e.g.*, Drosophila larva, [0018]) comprising

providing a population of transgenic insects having a human neurodegenerative disease gene (claims 48-57), administering an agent, creating a digital image showing a trait in a population ([0299]-[[0303]), and correlating the trait with the effect ([0288]-[292]). Thus, Botas anticipates claims 1-2. Botas discloses quantifying a trait ([0300], claim 48), thereby anticipating claims 3-4. Botas discloses modifying and quantifying a climbing behavior [0300]-[0301], thereby anticipating claims 5-6. Botas discloses an agent screening assay using various compounds and a test and reference fly populations and ranking agents according to their activity (claims 48-52, [0300]-[0318]), thereby anticipating claim 9. Botas discloses determining an agent and reference phenoprofile (*i.e.*, a trait and a quantitative characteristic of the trait), comparing both phenoprofiles, and selecting and agent (claims 48-52, [0300]-[0301]), thereby anticipating claims 10-12, 15-17, and 21-23. Botas discloses an insect phenotype with characteristics of a mammalian disease (claim 56), thereby anticipating claims 24-26, 31, 33, and 35. Botas discloses transgenes for gene encoding a polypeptide with an expanded polyglutamine tract [0007], thereby anticipating claim 30. Botas discloses mutation which results in loss or gain of a function ([0007]-[0011]; claims 48-58], thereby anticipating claim 32.

Claim Rejections - 35 USC § 103

Claims 1-6, 9-12, 15-17, 21-26, 30-33, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bainton, *Curr. Biol.*, 10:187-194 (2000), in view of Hendricks, *Neuron*, 25:129-138 (2000), and further in view of Chan, *Cell Death and Differentiation*, 7:1075-1080 (2000).

Claims 1-6, 9-12, 15-17, 21-26, and 30-33 were previously rejected over Bainton, Hendricks, and Chan. New claim 35 recites limitations similar to those recited in claims1-6, 9-12, 15-17, 21-26, and 30-33, and therefore the arguments related to claims 1-6, 9-12, 15-17, 21-26, and 30-33 also relate to claim 35.

Applicants argue that there is no motivation to combine the teachings of Bainton, Hendricks, and Chan because Bainton discloses a mechanism underlying a response to drugs, Hendricks focuses on sleep studies, and Chan utilizes genetic biology analysis and does not mention monitoring

In response, it is noted that although Bainton studies drug abuse, he uses a simple assay for monitoring fly behavior in response to an agent (a drug) and image recording (p. 193, Materials and Methods; fig. 3), as set forth in the previous office action. Bainton discloses using adult flies and larvae (p. 188, right col.). Hendricks monitors drug acting on transgenic insects (*e.g.*, caffeine, CHA) using a standard locomotion assay similar to that of Bainton. Therefore, one would have been motivated to combine the teaching of Bainton and Hendricks to monitor behavior of transgenic insects, because the utility of Drosophila for genetic dissection of complex behavior is well known and has a long history in the art. Also, a Drosophila model has been successfully used for monitoring various diseases, *e.g.*, the molecular basis of long-term memory and circadian rhythms, see Hendricks, page 129 and 139, therefore one skilled in the art would reasonably have expected success in combining the teachings of Bainton and Hendricks..

Further, Hendricks discloses modification of a mammalian gene by drugs, using monitoring the genetic modification by monitoring locomotion (abstract, p. 129), and mapping the defect in behavior to a gene (p. 134). Thus, Hendricks conducts "genetic analysis." Hendricks

discloses that sleep is related to changes in central *neural* function (p. 129) and also refers to "*neural* mechanisms" of sleep in mammals (p. 133). Bainton discloses determining implication of dopamine and serotonin *neurons* into locomotion (p. 193) and suggests using Drosophila as a *genetically* tractable model system to study mechanisms underlying behavior responses to drugs (p. 193). Chan discloses that Drosophila provides a genetic system for elucidating various diseases, *e.g.*, neurodegenerative diseases. Therefore, one would have been motivated to use a simple behavior assay for monitoring neurodegenerative diseases because neural function changes with changing in genetic make up that is affected by variety of molecules, as taught by Bainton, p. 193, Chan (p. 1075), and Hendricks, p. 129, 134, and 136.

Thus, for the reasons stated above and in the previous office action, the rejection of claims 1-6, 9-12, 15-17, 21-26, and 30-33 over Bainton, Hendricks, and Chan is maintained. Claim 35 recites similar limitations, and therefore is also rejected over Bainton, Hendricks, and Chan.

Double Patenting

Claims 1-6, 9-12, 15-17, 21-24, 25-26, 30-33, and 35 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 9-12, 15-17, 21-24, 25-26, 30-33, and 37 of copending Application 10/618,913 ("App. '913"), in view of claim 29, and in view of Botas, US 2004/0177388.

The instant claims were previously rejected. Applicants amended the claims in both applications in similar fashion. Applicants indicated that they would file a terminal disclaimer upon the notification of allowable subject mater in the instant claims. Applicant is advised that until a terminal disclaimer if filed or claims of the copending and/or the instant application are

amended so that the claimed subject matter of the copending and the instant applications is patentably distinct, the rejection under the judicially created doctrine of double patenting will be maintained and no allowable subject matter will be indicated. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

For the reasons stated above and in the previous office action, the rejection is maintained.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marina Miller whose telephone number is (571)272-6101. The examiner can normally be reached on 8-6, M-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang, Ph. D. can be reached on (571)272-0811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Marina Miller
Examiner
Art Unit 1631

MM

MARJORIE A. MORAN
PRIMARY EXAMINER

Marjorie A. Moran
2/16/07